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J.R. Fosberg

Field and Collection Note Book

No. 56

(Oct. 28, 1959 -- May 8, 1960)

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7. R. Fosberg.

I very Coast In the evactal area the most intensive agriculture is in the bottom lands ay the mouth of streams, as at mouth of Banks R. Gardening on hilled who black wet soil. Banana plantations bottom lands, on these The reddick from sands that make up the terrace are extremely deel cute 19 m. deep show nothing but simpon sand, not visibly bedded but with vertical and slanting cracks origin of which is obscure some but not much slumping even where cuts are almost vertical. Krads in this sandy any, where not asphalt, are surfaced with red lateritic gravel-sand mixture or broken of parks very firmly, feelate hardens some.

No vultures seen in Joan Gast. Veryfer magnitoes amywhere at least at this season.

Oct. 28 - flight abidyanangular cleared patcher, accra !- right side of plane. very sandy, and a canal paralleling The around abidgas august Some patcher of white Catharanthus is a very abundant weed away sand in from beach. from netual strip, it forme small grass wear mostly low open serul Beach sand and much of interior sand rather with vines, some grassy towny to grappy ton. areas, much of areg Clearing, Ecultivated and a closed serub, probably abandoned mne abundant because of vincs. Land showing fetween budes eastward immediately back of beach. in some areas. Inland the frest is 11:43 Departed 11:30. degraded, some palches Castward the savanna of grass. from a rather extensive 11:44 The canal terminates in system between the a narrow coastal inner lagron and the lagron, separated by a coastal lagom as frances very narrow bar , or early grand Prassam Between more than a bearly - wage, this and the coastal layors from sea. This ban largely is an extensing belt of cleared and planteto commits, tricked, with stensing these very young considerable Kaphia, mand from lagron patches of many and is thicket and some fruit open black water. The largely cleared along legion. contral bar, outside the Backof this a namon planted to oranits. It is belt of savanna, some of it with closed gram, rather manow. some very open and Cast of grand Basian sandy, almost desert-like in thicket and frost with Har a parallel texture, perhaps

of beach ridges lagon much front This ends at first villages numbrous on beach ridge, very aderly water a canal enter in appearance. lagoon west of river, also a black water lagron. 12:04 Eastward considerable black water 11.50 Rast of the stream a winding savarnas jud back of beach ridge. Itall drannel to motheast back many villager and poly of beach ridge extensive flantations on beach ridge. thicket and many. with small black 12:08 Course a bit more away from beach. Savannas water lagrons near beach, larger modely fewer. Villager fewer, one or two inland. Some clearing here, Vegetation generally 9 especially on beach ridge morain of mall cleaning, abandones and around lagons, but greater part of land between cleaning in various stages of regrowth, beach and main lagoons worded, Floating grass and somewhat larger Entimes eastward to along edges of lagons fincal white hand patches whey coust luns somewhat with soul near beach youthward Eperliages near ridge between black water 17:13 axin.) Grads and lagum. Kather for inland Thugh of beach ridge 11:54 12:15 much broken cloudiness land cleared and planted few cleaning, to young coconut. Back of this randy land probably forme cleaning along savannas. Frest back 12.17 words, but generally If this then lagron. Variation casturary good froest so Jan as a large cleaning with of this pattern, but no

1959 ghang inland. Then a moran an establishinent in of cultivation, grans, serth, apparently a frest, this extending Luga plantation, with father and father inland, clearing operations in 1235 Blange city. progress in eastern fat. then grang to thinky around this espenally frested or same overty southof it, a morain and fraest, morain back of beach. an important road paralleling court, villager continues eastward. a small town, between Jehrnach ernst again, 1202 it and evant foil crange red, 12:37 Mosair of cultivations and frest extending the mosain here is mostly dearing and grend many village. inland, Ann roads gring inland mpressim with rather 2:39 foil range red. I wo from visibility, inthat fairly extensing towns there is more thicket or on lug eastward fored than cleaning. pointing books of evant. Extensive ravanna Coast curpate to eastway 12:40 Little front. This custor fromting eastward. extendi eastward, some Considerable savanna aultivation but locally. frilly stacked, perhaps. areas of serve on 12.41 thin freth. Some cultivation farge villages on coast. inland, der seg Eloudy along roads. Country become more 12:43 cultivates, but still 12:30 On right unsiderable inland & cleaning any with much some and savanna. Nore sunt 17:31 Rather extensive savanne and remb-freet eastward, becoming almost continuous patches extending more. thin frest, but with a few

favanna som consprenous savannas, dres eastward but green dearings. anextensive ravanna. ourse moraway 12-45 from land: mobably the acera Plain (widely strases 12:55 frest approaches coast, but with savanns tufts of serul - said by Mye & be on terms areas back of it. Wen savanna and dead termite mounds) 1256 lagrons and ban matrix green becoming aling cond. hale eastward, with freaming towny green?

Prices month with anide forme very rectangular 12:5/ plantation, much burned cleared land, muly savanna and lagrons and sand flats cultivation morain. and bors. 18:58 Farge City surrounded by savanna-cultivations Then extensive savanna. morais accesa an extensive city not at all congested. Patches Many villages. gallery frest, open gran of savanna, largely cultivated, extending Thin frest or semp. into it. Plenty of trees meren, brally cleaned, in town, but not generally locally more tonse. green - trees reallined, more cleared eastward, East of town extensive 12:51 another small city evened but searely cultivated. I outless! Extensive navanuas. Rather towny in color. the termite savanna Gallery frest. mentioned by Tye grass all this a strip along bene closed browning gran. mast frest inland Trees and frush cherry abundant.

ghana 1959 Oct. 28 - acera - august Englivated plants seen. Parkinsnig acrilenta Delonix regia Hibiscus nosa-sinensis & schigopetalus A Codiaeum vanegatum Johnson globosa ageter (several forms) Zelvina pendula Zinsig elegans l'étunia ! Dougainvillea sp. Polysias quilfogli anderachta indica Chasia spectabilis Mangifera inding Infration, balsamen Kalanchoe finnata Congratido carpos lutercens Salvia grahami? Canna Imamental hybrids) Carvaring equisetifoliq ageratum hovstniamum · Carria fistula hunbergia grandiflore Thunbergia alata (large white) Ilcemeria rubra Shathodea campanulata a Neum sp. Jecoma stans Cila gentandra Duranta repens Theretia peruviana Lindenia angustifolia

10

Weeds Enphabis prostrata Portulaca lutea levine india Chloris inflata Sida asuta Tridax promotens Boerhavia diffusa (vd fl.) Wastyloctenium agyptium Malvastrum cromandeliamo Euphorbig heterophyels alternanthers (pungent on) Cortulaca quadrifida? Panieum maximum Talinum I hyllanthus Cyperus cyperinus? Enphobia thymitolia? Desmodium triplom Vennisetum ep. Mimora of. Gragnostis amabilis Hedystis commbosus Enphobia hinta Cyperus notundus Clibrea ternatea Sprobolus diande Commelina sp. (closed spathe, rlange blue petal) Hyplis suaverlens Crotalarea retura ? Cenchous echinadus or bounes Vernonia cinera / richolaena rosea Stacky tarphety of garranens

Cult. plants (ctd.) Lawsonia inemis Pithecellobium dulce (Enthurium (large red shathe) Hydranges japonica Chrysinthemum mifolium Monster delisions Cotof Pityogramma calomelanos Manihot exculents Capricum fulexcens Thomas batalas Hibiscus esculentus Cealypha hispida acalypha godsebbiana? Spordias sp. (large round fruit) allamanda catharlies v. cethatic Baubinia of (5 stamens, long calystabe) Gugiacum Officinalo? (blu fr.) Peltophorim ferrigineum Enagratic celcais Sesamum indicum anachis hypogaea Ber may Lerovena glavea Lectory grandis Cesba flewlandha Terminalia cataffo Cous mucifera albiggia lebbeh Hua copitans lamarindus indices. aracardium occidentale Solamin melmaena Cordia sebasting 1?

Photos

(A-A)0)

Oct. 29 - aura aupat gently sloping samma, with tall Hyparchenia (?) to 3 m. scattered should and tufts of small trees and shrubs, these tufts marling old termitaries Mostly with a large Claeophobia, some azediralta shrub, something like as allophylus, and several other shrubs. atches of a lower gran resembling Ctenium. Open patches of a low (1m.) string acaria (?) - Soil bounts rod hours, fine and light to rather heavy and full of buck-shot congretions. Scattered patches of from manive, Capricions sweet potatoes, orbina, etc.

termitaries, & 3 m. a few plants established on one. When a piece was broken off, exposing galleries, were seen at first. Then large soldiers with enamous brown heads began to come forth and to me blindly

over the surface of the hill, many falling to the ground and running around on the ground, snapping their mandibles have appeared and began to deposit mud, and in a few minutes some of the smaller hotes were walled over and walls were being built over many of the large me. Many soldiers caught in spide webs on butside of hill in which minute, for soldiers to appear.

weeds observed (eta fum p. 11)
Tribulus cistoridas
Gemphrena
Emilia sonchifolia
Eragoretis cilianis
Lantana camana
Passiflina foetida
Cassytha filiformis
Abritilm indieum?
Schwenkia arnerirana

1959 ghana Ost 30 - some airfrag Tall grass savanna below disport to s. iv. Leveral species of bushes and small trees are commaazedirachta indica Bridelig sp. ? yellon fly. the forming fanthoxylun Croton or Mallotin 2 My. Cappais sp. Cordia sp. 1. recarth (buch red fls.) several other The termitaries are built right around living bushes which buppen to be in the way or to have a branch in The way. The soldie termites that come out and swarm over the store of the hills when a fred is broken off may apparently either go bach in a fall to the ground. after 9 shot time on the ground. running about they die at least when in the sun The termitaries are mostly a dull red (occasionally shown), so hard that they can reared, be broken by the first.

a cordia- like plant but with los in whals of 4, cywod panieles. a heavy-nerved plant with dense ascelling famile of sessite ffs. a perocionsly spring Doryalis or something of a tall Walthering a fretid compound - led. stendershrub with aproxpors fruits Verminasp. (shrub. white Ils in prinacles, yellow propyers. a diverse lot of vines tangling the shlubs into thickets wherever they an close traether. The grass is dense in places, open in others. Where open the ground is usually eroded til the surface is or gravelly man of concretions and quartz fragments. Claerpholog is a thick

Claerphobin is a thick stubby tree with a dense branches with large fleshy obsoate greeky leaves. at the brottom of this long gentle slope is a ditch about 2 m. deep, drin through a red brown silt soil filled with fins gravel, to y 2-3 den grayish brown. Then the rather uniform red-brown material differing locally in redness and in amount of gravel.

Lie or a warped light orlared phyllitic schirt with quarts and light mica

In manihot patcher is a population of Rupholis (Poinsettia) showing every leaf shape from namowly linear to broadly elliptic, voite we obling a obroatis, entire to deeply lobed.

Mo color at base of top los.

There seem to be no wiltures here, but crown withanhite and white head are fairly common.

below airport in savanna.

pedger of Theretia peninava.

Gredinachta, Spendra,
Delonic, Mangiferá,
Cassia spectabilis (a siama),
Pithecellobuem dula,
are the common street troes.

Hibistus and Brougainvilles openerally commen. It few codonists in downtown area. a few Cosmanine. Coernit, show Orystes damage.

The city is very ofen and spread out. Even the downtown area is scarcely congested.
Trees are frainly abundant except in the central business district.

Harbor og open røadstrad anchrage close in.

"Old tour" around waterfrent squalid, evouded with one story shaels. Indewalks maker everywhere.

ghana - Togo - 25 24 margin. Luroundes of narrow bar scharating by extensive the lagom from sea is a slight tidal march. Some shard development of mangrar patches of dry sand serul. with savanna m Coconuts along coast on seaward side. bar Gearl. Eastern puto Keta: Coastal bar 4.30 of dagon change to spore bounding lagoon swing northeast here. The bar avicening (?) then to extensive marches. There alternate is wide mostly covered with savanna on sandy by the town: Town appears gratches extensive network worded, as does the bar and oftidal channels. They beach ridge to motheast. a large estuary with islands, very marshy, 4:20 beach ridge is worded, swampy areas with then a stry of savanna halms and some other trees and lagrons, they a strip esp. a light green one like of frest, and, inland, a willow extensive savanna. gar of this winding channels and strips of march and probes open palm ghert and probes the inner front strip almost 433 prinches out, and the wastal one broadens. We are so far at seg now savanna, open swamp, Togo that visibility is from. dry savanna. favanna strip pinches Extensive mixture of out. A fair sized town tiday march and swamp. Dean a aflas? a probably Lomé. with little dry ground. East of this a brad This seems to have arlifiered wooded belt along coast, channels or paths in it. inside this green grassland, with water in them. a narrow strip, with west side of an extension open frest or dense savanna lagon system, with back of it. last grann reed bales a large lagon inland, but around many of its inticate visibility how too how.

Palioney 26 1959 Logo - Dahomey 4:43 area between lagon 1) as is densely worded and sea seems worded. but hard to tell if by mangroves or coronists, a large channel from the from this distance. lagron extends earl to Verylange lagom for a tidal inlet and a broad inland I visibility from. estuary inlant. faguen continues castward, East of this the country now quite conflicated. seems more worded -Bar broad, covered by a morain of word and counts. saranna. Visibility from. much broken cloudiness. manginer along channels of estuary.? Considerable mangrove 5.00 around lagron. Mistur River with narrow estuay. 4.50 of swamp and march The rivers on this court have their mouths inland. 5:02 Lagran quite never, deflected pastward. but still with marshes · Considerable mangine behind it. I mouth of this me. apparently country a narrow lagron belind it is largely paralleling was for wooded, some sawanna. a considerable distance Beling lagren, now very eastward. It as seems narrow, with mangrover, rather continuous so it is a mosare of ravanna, is hand to tell just where marsh and frest cornect the over mouth is feveral plantations, serul and other were also enter this pasture on bar. lagon, which continues Lagon is now my 9 eastward, with some narrow shannel lines substantial areas of with mangrove, then ends. mangrove or perhaps 5:06 Some fits of march. fresh water swamp, much Then inland a very cut by open water channels large lagoon, separales area inland seems mostly from sea by mosaic of marsh a wet savanna.

nigeria 28 Villages along ward. gran and freet (swamp?). 9:10 am of layoun, lines Cotonon. Junge lagory by broad marsher back fit annected with withtidal channels, sea of broad channel. curves nearer sea. fagron surgunded by fand inland a mossic march and mangrove. of frest and savanna East of town much white predominantly frest, sand justly open soul becoming more so ladway. patches of this alternating 5.18 a few relager unland. with swamp and, eastward Thest is dominantly with palm (coconut?) Elalis, some patches plantation. natural front 9:10 large areas of marsh, another black water. 5 20 of lagon. laguen, inland. The arma channel from another area of sand, Certo novo now elose o but lagum become a front tida march. The black water layon 521 5:17 Land forme what excends for inland. appear to be beach udges The other one parallely slanting a bit away from coart. court reparates by marches Comes is now well and swamps. inland. Country q alange area of marsh moraic of oil palm with mangior, then many and banana patches Then then water inland with the strange strikes of lato novo inland of soni-deciduous frest. large swamps and a wide forme cultivates land. ann of lagron which Strip of layour still words eastward between entimes along coast, marsher and manging 5:24 Seconing miss complicated swamps. fearvarg Inland a morais of and areas of server, grateles of cultivation, gallery freit, and march.

Migeria nigeria 1959 30 nov, -) keja, Lagor regrowth and oil Cultivated plants seen balon, in apparently Plumeria metra cateria relation to strip Caesalpinia pulcherring of freet perfundicular Canna of to crast ! This more and lerminalizatepps more inequalor. Delinis regis Sometrees in finest and asconopus compressus apparently in flower. Empliabia cysthophan others bare. Redilanthus titlegmalorde 5:27 Strips of swamp Elalis quincinsi winding dendritically Bregainvilles specialis into interior, seen lotyse as quelfoyle quite bare Hilliams (Inemit Al hybride) mostly prest but Hymenoulli lettralis rather degraded. Canthouve sugittefte Patches of what must be Wurangand of Carria papaya palm and bamboo, allamanda exthertica o henderioni as not approach Lagors Codraeum variegatum Jew however, and even Caladium bicolor Volulace grandiflore cleanny are few. Bryallis glaving Frest rather good, but 5:30 Polyscias quilfoylei with lots of fralmis (Elieis). nephrolopis buserista? several concrete roads Pregnia minosa going north. Funge clearing Carsia sportabile in mames We circle to right over Capitines of outstirts of Lalgoo. Coloris scutchlariside Open words, thicket A Cordia revastena and cultivated fratches tertocarpus allilis Very green. acelypha hispida

stimely Velone to daze



1959 nigelin My now. ! They Rayon Deld see Engelorbes hunter Elevin indus Monadia charantis Synedrelle modifling Sproboler dianter & Eragiostis amabilio Stachytaphets janevers Cypodon daitylon arphorbia prosterata Experus experious Dactyloctenum agyptium Portulaca quadrefida Umaranthus vivdes? Hedyotis conymbosus Peperama pellicida

32

near I breja Rest House were colonies of weaver birds, with many pouch shaped nests. The birds were working busily and poisily and the nests.

furnished with a subulate curved teeth on the proximal margin on the conver. outer same side of the main rallies are five or narely four pinnag, opposite those in the inner side. The distal at two or three of these are similar to those opposite them. The proximal two or mue usually three pinnas are conference primately compound, with three or more usually four pair of lancestate of obsancestale cucullate to cocullate mucinite princites oppositely or smewhat inequelarly ananged along a somewhat swollen to slightly compressed slightly backwardly arciale rachis. The distributed and programal pains may be reduced to apex is usually subulate but may rarely be expanded and similar & a finance but then quite asymmetric. On the ventral side of the rachi and of the seemdary ractises, at the base of each pand pinnules, is

a formall party or inequilarly transverse line of tiny black to pale brown very short hairs. The frinne and primales are sparsely publishent with very minute antinsely apprecial hairs. These stipules only occur on fast growing branchets, and as growth slows down they become progressively educed with our succession less. They are the early caderon, disastrulating, and are not mornally present on mature twigs.

rigein 37 36 1959 pletren nor 1 - Shejn - I Lagor, questrate to evert, corlla white. 1 32 Phyllanthus exit somewhat glarcon ploves purple 33 Cmilia southifolia (L)DC. reasional

38 with war. O fren, partly remb direlet, Pages to I thadan from partly cult. Janana, Citrus, Jaa. Elasis abundant, breakfruit Thicket of various ages common. fandscape along anthorlesty occasional road a misture of garden 70 Thicket with class, and thickets Janthosova commonly out also Jea. banana patches. 79 village High tension line follows and fulled with Raplies year bem out of town whichest me abundant than garden. 30 plinchet with some featches of you fired. Elain is 65 small river. abundant. Worsh marshy and 83 mine Wicket Das grove, a Kiver on left. fratelier of stores secondary Pennisctum purpuran freit, afew bambos clumps. very common in This cultivation bottom land, between 74 willage Cola flintations. ? thickets, scattered Elson is much open march by Cultilation (munios), Cola, Glaci, Cacao, thickets Crossed viver. Tangled swamp borest. Tistia + nagraphaea in 37 Kornybagbe fla generally Cola plantation open pords. Rounded trees 6-8 m toll. feathered Elacis. Colo 69 Svamp not science wash trees touching or almost so. Some degraded tall front 91 mostly low thicket. Cossed large red more swamp. Then dry 93 Shafferman 71 ground mostly cleared. 96 Levaspy brest, then Musanga besome occasional higher ground, mostly thicket and culturation! 72 mostly tow Tangles voisay scrub, some cultivation 97 Banana, Jacis, fratches 13 almost no frest, formo Voon, of houst creas filantations. Villager & morning) 99 Cota Choas,

grover of gil palms and scattered individual of palme, with here and there swampy or marshy areas, either thickly wooded a with grass a sedges, and occasional scrapes of from degraded high freet. Ceiba does not seem to be especially common, feathers tall trees of various species are left throughout the area. Mussanga is seen here and their but is mortere abundant. From the road perhaps thicket seems on thigher proportion of the land than narrow strips, of thicket along the was may cut Iff the view of ghiden patelies and caras plantations. no. 1 Hadan -Cultivated of planted species sun. Codraeum varegation Kneymin nivosa Cassia of vigate shout with very smell learn and very story fr. Chryallis glaves anonopus compressione Canno of, you fel elfel smell fle Cleme spinosa Lantana cernary majurely alocaria macrohiga Redilanthus to tithymaloides Tectora grandi, alstonia sh-I your craines (resultos acuteros ese accalpinia pulchering Cyprodon dastylm albiggin lebbels Volgania gulfoyle folanum lyropersium Comes papago Nephrolepis driffic Tagetes sp Caladium bisolo alternanther version acatypha hispida - Timis elegans Elinicidia sepinem Josephian of Hiliseus mitabilis Dahlia variabilis famorea ramas

s. of Ibadan gimban Foest. along - vas . Cynometra and Bruchystegia eurycoma very common, and cola lawing olia + terocarpus santolinvides, Vapora hendelotic (stilt roots), Recendendian, Back from The river scattered reliet tall trees and a dense tangle of climbers and shribs and saplings. The saftings, growing up. lift the canoty of climber leaving ofren skace between the stems of the saplings. Cast of here a large breit very megular, with considerable number of tall trees, megulas this intermediate and lower storys, thick vines on ground. The intermediate theer were largely removed for firewood fina factory and power plant. Much climber removal dias been done her, also, recently

but regrowth is fast. Rittle

nova-Idianyire 12-13 mi

is a talk bluish grass, to 3 m. or more, common to dominant in the savanna around I badan. Pennisatum purpureum is the other abundant species. They als not grow in an intinte mixture but in tratches.

Old field outside abaden at Lafria Rest House inegular open sout of glinicidia mostly about 4 m, tall, tangled with anieum molsimum and vines ruch as Chitmen, also Pennisetum polyplachym? + Imperata; Consistem propulein (called elephant grass, though Onochi has never heard of elephants eating it) is coarse, erect, to 4 (n5) m. tall branched brosely toward the lop, spike 15-20 cm long, perhaps vom, thick, on long peduncles, exserted above the top reduced blade about 7-10 cm. Habit not tangled 14, lader and shouth matron, modes with a my of stiff butles.

48 no 3. I badan - for flight another area of glincidia, por, left side Weather nearby, That was probably at badan rather cloudy. similar has grown up to small dist sistiff. a thick coppies about 5 - 4 m. left ground guiridea, 9:27 tall, the trees pollarded at about 1 m. and many low tangles semb, and of ward-like shorts groves of Elacis near airport coming up, forming a around town mostly closed canopy, no vegetation cultivates patches and mude thislow soul. Ten trees in town which is crowded. Onochi says that exceptor half which almost the entire front is densely planted & belt of nigeria is a mosaic of slifting agriculture, some soit of Tree. latelies of tall grass regrowth cause, mainly andropogen tectours with some frest reserve near town, with send and cultivated patcher that are much allered east of tour by man. Amall villages numerous I destinguisher Cassin same 9:31 Elacis abundant. from C. spectabilis by the fact Visibility almost none 9:37 that the racemer are erect Hole incloude - morais of in C. marney, branging in patches of cultivation and C. spectabeli) forest then me me visibility Slight hole- green shifting no 3- Wadan aupert agriculture. 3 vultures seen (frist sees Holes in cloud, - hilly country, in aprical Agran or partly cleaned, some post slightly forther tail, dark 945 same perhaps 3/4 cleared. solly brown Mais common in small yours 9.46 have some ugus of eversion 947 . some freed patches mostly Elacis

1959 nigeria 52 10174 Rand. Keathered cultivity a village. patches of cultivating Lavaning becoming dominant with dead trees. ofen front on grante hills prevalent a land become except where they are bare patcher blace has less billy disappeared except for feathered small granite 10.74 some in the namous outerops, not large gallery stripe along shear fills: gallery friest, savarfra small meas Hills with open to of open fruit. 1026 some small erosing scan rether closed front, gently Morais of savanna ofen sloper savanna, scattered forest, closed front, in small cultivated patches soil year very megula patche sand orlow to red. Itel with galary frest along some granite exposures. -streams, rather oper. Hells in middle distance 11.27 Brassus common in 1817 Hilly but no granite. Stream, freit along Hills are grassy will some small trees, navine 10:00 Brasser more common along densely worded (Photo) a stream eversing wurse, favorna with dendritin forming groves. steam with gallen (photo) Close mosaic of ravanna, granite dome (phota) open a closed fruit and I finall river flowing smewhat to left of course, galley with some Borassur Then some Borassus greandering mudtly scrittered in open fromest 1021 Rolling evenly, mostly however in gallery. savanra, with galley (then stream joined no cultivation it all Enjanother from mull. now for some distance. 14:47 front locally denser, 1:30 Mostly open front varying dense to open with patches to savanna, gallery of ent closed of savanna, low hilly

1959 nigeria 62 Savanna on very low Course about east hilly wentry with pasture of cultivation, imaderable that small grande exposures running sheam futtered Borassus in luf & a ridge with an abrulit scarp on molling cultivated land. selle. Low hills with some 11:48 They a stream valley mande. Some trad low grengraged hills erosin. Cultivation on lower flatter ancor with patches of granite fell ovelgrand trees and patches of dilleration only locally! forall apparently of soil rales clumps of llower - fram refrents windrows on sites, abundant along ber grant good more a less along 115) & large low granite hill will no trees, red Then rolling overgraves reddish plain faitly errin sean away cultivates, sind grante from wein road. brotos, they becoming Unother road with no me abundant. 113 2 farms arrows the Cultivates patcher sentler a very muddy, milley brownish stream towning Myl farms and much counted of nanow angle from back, thou cultivated and along crossing it. a small very red muldy Bad gully erosion on wer crossing course at rolling overgrazed, partly right angles. cultivates plain. 11 47 Rolling tountry, partly a bracded stream from cultivated the next bradly overgrazed and a logionity of nang Andry granite bulls forme very small granite sunning parallel with supramer.

1999 nigeria 64 1155 this stream. Hen badly overgrazed and seriously croted country, shotted will grante patches 11/41 7 approaching Jos ainstrig. expored granite. Villager will that the steel chicil works. Cultivation on high ridges of soil 11.58 famles. Nov. 3 - Hill Station, Jos Built on a granite ridge evered by picturesque boilders. Kandsiafied, with abundant anamentals. Hedges of

Dodonaca viscosa.

Tagetes (several forms)

Suplished pulcheniums

Pallia variabilis

Plumbago amiculata

Catharanthus roseur

Plumeria ruba

Porsa of

Porsa of

Donata repens

Bougainvilles spectabile

Lianthus caryophyllus

Finnis elegans

Extletis of

Extletis of

Exception apapays

Prangifera india

Ornamentals seen:
Dodonaen viscosa (bely)

Pelargonium zonale
Begonia (tall red, Frenzöligus los)

Althaea (bolly hoch)

Vilea mierophylla

Fiers pumila

Mangifera indica

Cacalypha godseffiana?

Zebrina pendula

Kalanchoe pinnata

halvia splendens

Malvaviscus

mr. 7 - 102 Trees inequitarly spased, 1 - 25 mapart mostly as Margo is the comment albigia- the legume. tre in the investigate Josephum patelles zhu m tall. outstaints of the town and Krad & north open high scrib to shout very common grans 2 - 5 dm lall ofen. servening Ont a little of i very Pash toward front of gradelow should savanna, apparently Several this should in 1-13 har over cut for finewood forms scattered Cucalyptus comellution Tall, thin grass lower or of same height between them. Then pasture with seather mango and other trees, I renertal shout a papillimate pateles of songhum. lequeme with loose terminal frall wellages of mid but, Transcher of a mall pento green a small bobbal flower large tripolate live. Trees become scarce Most leveral the leatheryof land cultivated or un leafed shrubs, one quite from fraster this with shing teacis is abundany small bushes lebe farmering but without in clump of sprouts. odn had with flat newworks Fant bull with low annoter of the legums. Jen som b. sing hum still gradually. Must resulty acasia somenant mostly the large leges me. mall very hard Serve becomes Thicken byt still in a contall. winded termitaria filled with lighted person of grass Very from trees. Yrang very thin. I few shorthy dearing enter. perfreps 1-15 cm long, or Country flatters out, I small rocky till avered by a sclenophyllow open sent tyles le one my common, 1-19 m tall, large leafest higher thin grass what I han grass, close contour con partle here is sent it is largely across

1959 nigeris 70 nov y - Hill Station, south of Jos NATURE CONSERVANCY Bouldary granite hills a society to preserve living museums with patches of shoul savanna between the know of granite, the shoules -00 sclentphyllow, mostly raing legumes, 05 - 1.5 m. tall, typeroline the grasses up to mitale of montanuangel. In the crevice between the boulders on the houses are various shouls, but -il Kinan gof met especially a stender bambro The culm sheaths are at 2 apres uli this stage, somewhat 70000 loosened from the culms t I except in the middle of the base, and tent to curl Bull Pan Was they are buff Inside one val a tiny true toad, about rem, long, elliptic in outling, ales about the same shade of buff as the sheath but 7400 - 3/00 m. mits apparently with some ability to change colo, as Walter Rose it got slightly darker on my hand It seemed & adher Rept - temps of forthern This capeton to the sheath, with its legs on ne. Golded very close and under it to feel were mange, with suction dish. The belly seemed to form a suction dish ilso. When lovened it settled down on my hand, adhered

NATURE CONSERVANCY

a society to preserve living museums

Hyperoline all mortamusangel. Kinan gof Mc E aprica The state of Bull Para The 7410 - 3100 m mis Walter Rose Retet + amp. of fouthern morning capations

74 is filled with concretion now if - hip by queto for mongh between rocking Wills and then crusts of vary materials, mostly, suppre inon oxides, It is pannel, are grassy, trees only vering a half gound. afing woods any avelue in the dry season the repper (hotos On walky hilly the white layers, 6-8 m, are too hard of dily. Working is done in Euglandic is abundant. The plains are largely a wit lager under a cultivated - songlum + court, with water which millet or in pasture seeps out of it. a man my if lucky fill baff which is over grayed a calobash in a week while Energystus planted around towns and here ho must sell to the owner and there elsewhere. of the men. He may get 2-3 area south of Bulsun younds for it spotted with when and great mounds of earth Range of nother abriefy I which are old ten wine granite hill more The bille to the south structory vegetation than are more grassy, though usual, incl'a small still with my succulents palm (Phoenix ?) campitose, and produgraces. Very stenslende, world smile barbabo local " phobia o sy, common. I'm mining on both Trees very rare! but for large scale, involving finewood. (Inthe large muchiners and in day small reale, by some flat topped working hound digging and genting remnants with stoping Many small villages sider and nin with which sens to be a laterite court. The tin access in a deel red to yellowish a mottler own a slight slope the and red lateratic clay do goneral applanance of

76 monger frost Perery. the regulation becomes a but more luscureant and in height, the to some or in the slightly lower plain wherever it, is twisted ? - 5 m apail. no altivated is Parking Viter Eugene Hamanier savaring. Some Viter. othe trees protected by (Juholo), (amarindus indicus, (indegenous) Carap Cemun House ferminatic exiconnivides, Landscape bedly evided. Godad fraits sparsely Bridelin Canthing Rossin Janiella stivierii Minger market Parkin, Combretum, gardenia anageism, acada seberiano, decirpo Reanlets Black cakes from Engthing, farcocchiales, Randia ladrin seed thoun cake for a semi-decidions trong peanuts. Taro sweet potatos schropbyll offen frest Burned lightly ots frames con (toghen) for milly lead millet neighbor leaves but may on her oby Iranthin common at least = 2/2) Capricum torrates scare of Ground everis a this Boonbax for making way steppe like grass. Curenligo alligato suppor intelled common. many other from bright forest were Votash herby. Elephantohn of mollis imported for for noth mixed and to been powder and put under left, Shouls are as sommy a sould. toclean texte as trees or more so, or strang distinction. Degand here a few Borasques in places this grades to Tryit eater by children lair becomes brushy will scattered her, little! in the other side of the for from over grazing. was is the salmo soil of land, improveded Change & spor well forest

80 Korgley hells frather m sof for small houses lot the landsupe miture of gran and to vertical mind wall shrely astellamen of in addition, & having thatches is the formers or woter a cereil amis, Living, woofs are protected by photos grass hanging vertically from a rope stretched tall setava-like grass, arrund the house an andropogen many Inthe field around othe shruft a conspicione there houses the principal aporgnacions vine with croffing Digitaria Assame white flowers. I degree roselle, pedal miller babit not is marked and sighum as also here, but some specie gran the seeds of the havir. no bamboo. soselle are made into cale Butyropermum proling whate herong from which butter is grade Phoenis is among associate with the locally, in small clumps cattlein small flocks. lender trunk red spathe orbant 35 cm. ling of cm w. area south of bretune a wild muse, rand, with with conspiculous closed Expliners helps dornerating at west base a great 1 6-0 10 landscape on lather rough stand of Euphordia. tornely a form, but ground. forme area planted a little who then beneroth. ag tall Tephnosia (2m) with The Enphrobia is used large freight flowers. for boundary belge. granite hills have an abundance of the white cylindia Euphobia 1-13 m

82 in 4 naragina just begand on a well hill is a stand of bambon, photos partly fruiting a lumped, gold son Nov. 4 - Maraguta, just moth small clump of arching 40739 (bambos) Osytenanthera abyssinica (4. Rich.)
Common on worky slope in mume et melly solid canes 4 m. Tall, to love thicket 2 - 2.5 cm. thick truiting elump dying heaver from another clump. Nov. 4 - on Plateau, 23 mi. south of for in cultivated fields erect; flowers white 40 Drotis common effermers white. 41 Borneria reeds used for food. 42 Digitaria abundant, planted erect; flowers white. 43 Hedyotis very common nov. 4 Mongu Frest Reserve in open sent frest 44 (Faron pusilla Bak. flowerswhite ummm shoul 2 m. tall; flowers 49 Randia white. oreasimal 40 Hedyotis erect

84 event bracks purplish 407 47 (lel.) amman Mr. 4 - 25 km. s. of for branched herb or suffruteres, bert, flowers white. 48 Breig verticillates 6. very common in eroded overgrazed ground Hill Station south of and some other plants are flowering. (100 (2) species of asponages Many dozens of welters there Lantaval Camana in shy the afternoon nov.5 - same. so well is a very This vulture is sorty brown coarse grained granite. has feathers on back of nech and top of head, front of nech and head bare, a duty grazish. Chameleon, very slow morning in Calletis tree. tare a bustard or volry hil. Tried to get away by creeping through brush, only flew when Collowed. (hotos of Euphorbia, aloe, bamboo, adansoning etc. In this grassy brushy regelation between brokks and outerops many of The grasses and annual harbs are past flowering, but a considerable mumber of Compositae, degummosae, acanthaceae, andropogoneae

86 Mps 5 - Hill Station, just south of your 10749 Hedyotis oreasimal in thin soil on granite hill event. may be old love plugs. Nov. 5 - blight Jos - Kadung left flugs. in benen i motor plan. 974 for Clatean a deposit of reddish material fetwer knobby granite outcops at a lower terrel - savening, tedger common in places grantly cultivates. The surrounding fields. uncultivated parts bally Many serious erosson overgreged, redderly and sears and gully systems bushy, some of it anopen Largely cultivated servel, some a short Inequelan frateria with patterns quelly with rathered granite vaturofs, some furbales - Mounding stemmin a bit greiser with joint rather marrow botters lands softem running north Tegetation of flat hart In left a clump of knobby hells, religioning a rather grass and cultivation predically smooth down beneath notrees on shrubs exieted on Less cultivation, mostly granite. 930 Country lower and rougher, Then savanna, some when grass without trees. most of land cultivates In right middle disland 9:40 a winghly circular except where to rocky rough man of litts in distance to right! forming zars inn a les a serie of strupt butter that

154 to left. From on right. concentric circles, not at all hoad green grany battom regular and with many small bumber or plugs. some fairly good cones. Possibly fine burned potely an old calden, but not well in savanna and marked. Then prest. Mosain P 96 9 42 Large rolling plass along of open frank, open servel, a meandary river with savauna and cultivation dendrely tributary systems Essidenble burning centering at right angle fame mosaic. mand gallery frant approaching Kedung. along niver and tributaries Farge river maker a bend Vigetation between vous around the tranfrom Then much and offen Emmediate vicinity scrub frest to shrub savanny of Kadon Largely whole a saranna no cultivation cultivated but this doe begat all. River neighby follows everse, to right, wy milly not extend me than a mile or trus. Hots they mosair continues of savanna and of Krad follow wary constrate, to ton open serul. Country grunty great 9 47 for granite outrops, rather for a good destance. smorth, terrain rolling food shoul savanna lever sungroff to right the same, but seattend cultisting dear aristriff. fanded. oppears. 1:51 a cluster of low smooth grante dimerin middle distance to lift. The cultivation, savarna gets themer more strubby, gante dona freit.

Mr. 5 - Kadung Cultivated a planted species sen Lodonala viscosa (bedges) Tougainvilles spectibilist lumeria mby Mangifera indua Carica papayo La tlangarthis whom alternanthus versicoler (hevetia peruviano (hedga) Carna hyprids) (etus cough shims lemy) Olbigia lebbels. I and one otherst Spathodea campanulata assia siamaa lamaringer indicus Bousses alliopan Lelonin regra Lanthourna sagettifolia Freus (like 7. probes) sidium quajava borney datylifers Carrains equitipolis Frank. the senero innia eligano lumbago amiculato theyna morro Jasminum pubiaceno Williamands catherities Merry of Lesovia stani belovie regio + relynd

Judas procumbers.
Dermodum Triflenn.

Ageratum comprides
fyredrello-nodiflers
Pennsetum (2002)
Borreris (2002)
Amaranthus spinosus
lida acuta
librus inflatos
Cragorotto amabilis
Folanum verbascifolium

Caesalpinio pulcheruma
Callitus of
Salvis Completes of
Sucalphin campbulences

Opeles of more belgis

Gallandia
Jalvis
Samanea

nov. - Kadung rear august that land soil generally gray brown with abundary buckshot concertions everely by vegetation varying from open sout with closed years to storshrub savanna; bushes boad scherophyll 1-2 m tall, grass 1-2m. grasses mainly andropogener. nostly in fruit. most of the shrubs not plowering, or fruiting, except for the abundant adendobuchos which is flowering abundantly among shrubs ar an acrilente Randia, everal legrenes, Bankines, Jardenia, et

Several broll-like on low

mes a like eximence, -4m.

above general ground level

are of a red soil, filled with

grantyite fragments and

irm concertions. There are

capped, inegalarly, with

a boun lateratic curious.

When the crisis from

the surface there is tather

no regetation or a steppe-take

grass about 1 m. high or more,

94 readows of tall gran most of the grasses reaches I'm a more sugar platation herbs such a a anthree, if bone of in londed with lequent, etc The aintife is det fruit. "Mahogany" both like with a laterite surface Appraias but man be Khaya alerite and morads Vsiderem jurgara lashin also where not asphalt (seeds so rotted, then cooked thrut with heavy and dried twice then grown and used to and to south " I make newed leave - dipterolary? it sweet " Olume" seed uses Monotes kerstingii for oil rolled, pounded, vil Kaduna nines - now very used medicinally for both erro, muddy in rainy Odornalanguage Bende Prov. and season rises about 4-5, m Agala Langer on) (an high water wash or bridge) flood; lowlands along In river bed me great river. no house in low land exposures of with much but many cultivated patches sand. Roche apparently shih acray maniet soghum, Tall Lower banks are sitt aren planted of Cassara. The many grass as cut and thed into Canan Gelding and a Marketing. mats. Jorghum is 3-5 m tall. Dominant tree generally roshy shetch rather is many along nos are some others, bevery medium sized Ceitra ellensive above bridge. Spording? along road orphorph legling to so bridge a bridge, mon other estanis of a should am tall highway Concrete pier is common on the river bank. one bananas along The above trees and a great many many trees are and adjacent low ground. series of photos from bidge

96 of Cterium coul in spend Mr 6 - trip by auto some e, groshres of laterite Traplier. his land is under just out of town, on alightly nation administration with high ground. When not introducted an trave permission to cut free and apparently the Khaya trees Then troad selenophyll scrub are left, and some others. (from firewood critting). Tive, rad is cut and cherry Incling lives read. I'm cult land scattered (re with ling, alternat from size trees. los nostifules, avillary 3- alle fruits, surpended ovuler, 3 separate not four west and south banched, stigmas I por is a vegetation, varying fruit esten, leaves used between ofer freet and savann to protect & colo mits from some trees who to some tall sun, water from leaves mystly mud less used for words, word Broad sderophyll. rather burned, astres leaded 4 thingrand 1- 2 m. tall. make soup "apo Gala fort silty, band. pro larginge) I crain very plat Considerable toppice Tales were mude her. shrubs from firewood carried in to town in goods entting. I few thong acacias. west of Kaduna Considerable variation in should configuration fages trees of Tamandus, crobed. Porhaps me strongs Khaydo rything A. Jamandus sinis" used to log in trunk, if any isday doi alyo mule a doubt for coughs. Turned garnet. almost everything else, escept grass is nother space bew legumes, is dry. worthy 2- sp and wpogoner and a Cterium The spike

101 100 1959 negeria mov. 6 - east of Kadung
im open scrub and
things grass
(40750 (dift. 2) Monotes Genstingii
most abundant shows 5 615 m. (ed) shrub 1,5 m. tall, flowers whitesh, fruiting caly penting. flower white, corollo 3 51 Hedystes conson in cultivated frennelform. 2 52 (diff. 7.) Monoter Cherstingis 600 mland shoul in tall. occasional in open serul frost out. They the cultivated I seems clear that areas are essentially the difference between ravanny. The unculli of scrub and - open valed areas are either ofen sent frest in this server with scattered are of human heer or savanna with activity. The vegetation scattered shrubs and will grow to tree sine of trees. In some areas the plants are not cut all trees have been for fineword. They then cut leaving either, as sent or show cultivated fields, or savanna in the vicinity open sent o show of villages on most savanna gratilies. himsellivated land. The two most generally In the cultivated land seen trees in the viscosity/ and uncultivated, certain of Town are manyo trees reach gruite a versonable and malogany which size because they are may be Kharja protected or at least not

102 some fairly large cultivated nov-6 - an trip Kaduna-Rano Heron plane it. side aduty haze a dust 517 left ground storm maker visibility Considerable cultivation ralle pog. agreat part of the country crossed a surfaced road has been recently burned. at right angle Small watercourses Considerable cultivation with strip of green some shrule sovanna, cultivation along them. a frew restlered trees in Serious erosion stars. both savanno and cultivation. her a mosais of savanny 4.29 Generally a mosaic of and open great. perhaps one fourth cultivation reis much large near and three fourths savanna. small streams. 5:30 More cultivation as we feathered cultivation. a small march with go month. 537 things of gallery freeze a pond in center They groundering rise with Easily a third of land cultivated many patche gallery frest along its offwards Ther a misture of open have been cultivated forest in putcher. but are fallow now Cuttivation predominant. Stream with grany Loil pale grayesh am buff botten lands, water. 477 Trees beisme frainly terious gully evin abundant and large moraic of large areas of タンラ in the cultivated land. cultivates patcher and I robably because They large savanna areas. are not burned. 5:24 mne dendritic gully Itil mostly cultivated Crossed as important road a meandering sines with at about 45° from come 4 right orchows at least 3 times the width of the present Then patcher of open somewhat incised channel. frest tree frainly large with cultivately and abandones frathe. Hen savanna with

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thaya" manchot torghum nangifero indice Hibiscus Aryland) Freu of Vlumeria rufin periums yours elegans Romphieno globo sa adamsonin digitata / amounters indices I rassus aethio from Canna (taybid) Nosa sp. Guranta refier unico grantus Zizyphus of (spineles, to glabra) afive with the stern, alternate his tright rose pents campanalate salvajon pls. spatilate deciduon los (photo) for puberulent. firm religious vel. aff homise daitylifere! cantan caman or acutesto gros sulphuman ders sentellamordes atharanthus wews nerium inducum Entrobes pulcherina elvins penduly Terma stans Caladrun bicoln againtum boutonianum

112

Nor 3 Barcelona funcipal street tree cerns to be Platanus Chypid).

In flaga Cataluna the
The is a givencus simular
The givinginiana, with
elliptic arms 3-35 cm long,
with a small, closely scaled
cup less than I am deep.
First dark green about, white
tomestore beneaths

Enfront of cathedral -Carrains equicelesolis Caprenn sempenies

June less and smoother bay Insid cathedral enclosing

Phoenix canavenu Magnolia grandiflas Livistona chinensis

In Parque de la Cintadela aeschlus pavia Telia condifictio

Chamaerops humilis fun Docaena draco

Magnolis grandfor

Hashingtonia filipera Experit lactylipera Eigustaum (everpen) Camara agrustifolis Cedrus destano

Cedure allantica

Enpressus of of macronya.

Robinio presendo acasia? spiroles Populus alla vecping form

Camus of the

Spreading tree with

Conocammum but odnless

Clatanus (Chyphis)

several other unidentified trees and many shrubs.

Platanus (hylis)

Leaver are partly shedgenerally Tilia are almost bare, Platson wave from leafy to partly trave, Fally still bas leaves.

116 partly bour the woods nov. 8 - flight from may be partly a thick Marcelma to Paris serub. Mostly darls viscount left side 15,000 green occasional bright Weather nearly clear yellow trees. but quite hary. Dissecture more muched steeper along sea by airport is 3 50 south slopes bare. a belt of small compact forme terracing, but mostly green flat council trees, nother uninhabited wunty! appearing grite trimmed. Crossed a sunding road. 3.54 there are only in the a valley, nother magged with vicinity of the airport. 3.35 a town and some villages Between alfut and city forme brown deciderous friend cultivation comes to on slopes. the top of the beach. Spectarulas redges and walleys, trending Hills with the magnis 3:40 east and west. Valley cultivated fields in blatbrottmed, ridges flatter ground many terminating in a large valley along overs. frobably planted, mathe 343 Valley bottom, thickly populated, the ridge rough ground running partly wooded, partly box phrences in distance Pyrener close by a left. upper andges more owest. ahead, some soon upper slopes brown, grang on higher peaks, dome tracer of point yest escarpments and terrace on several and on steepert slopes. levels, apparently freat along course some very white saliment dry bed 3:56 rocky sparsely vegetated cut by delp carryins. Holads and ploper. mostly thinly world some pastures, home some frest of lowest steep clift's bare, rocky stopes

Afrain 118 some of it ended. slopes. Upper slopes steeper slopes and ridge have some thing scrub. thring worded a trusting mostly dry grass Series of high steel wages afrew building high about east twest wooded in slove former slope except lower sloper, which a paletrook of cultivation, are cultivated or graze fruit semb, grastine, Becomer very rough. 0/5/0 I casimal tiny villages. Precipitory slopes, livitly Flat valley with a very littly vegetation tony, cultivated, with Visibility very pon. hedges floter partly Higher and less presipitous worked, faith, dry gran. Sloper become gentle, drie, no flat ground, mostly dry grans or stubble home plaller land, but fields home divided ground visibility very por. Jem steeper stopes very Country mountainous 14:20 -30 rocky, thin serub with but so thany as to obsens with showing through. all detail Then, densely wooded Over a wast sea of clouds or brushy sloper, some still 4:57 The supersupose billowy, orphearing libre gigantie very yello 4:07 Strike ridges crossing course, of stillingly beddes There become more inequaling Country generally northward. 439 A few heals or bove iloude pan rough rody and To left. busley to thinky woodel 434 swells ent Relief of ton Les relief land mostly surface of clouds is now cultivated. Scattered rather minut. Still corred a rive Leveral like inequely swells, ful on less than a tenth Towns, relatively gentle larrain. # 38 Chifted course slightly to east Terrain becomes wrigher,

California 1959 122 nov. 21 - try, by auto be bely to Laytowille thendren G. along East Bay Tree way, San Refael Bridge and nt. 101. Baccharis pilularis in Berkely Hills in puit. Some patches of artemisia californica, Photimo with San Rafael Wills, went open to closed overgreen oak frest (a serub frest), dygrassland, falcher of some fatcher of artemisia californing chapanal. Farther inland the offen fred grades to savanna, some trees are deciduous, mostly broad sclerofflyll. In flats the oals in the savannas de quite large On the hills the mosaic is open evergueer Groad sclerophyll freet savanna - Je reasonal short grass! Very little south near movato the trees are locally predominantly deciduous rather yellow now. Lale abundant along watercourses

Marin Co. - noning Co. 123 In apparently seasonal markeland on play ground. · Northward the proportion of deciderous trees become greater. the lower trilly east of was mostly grass and savanna, higher ones west of road radicioning when to closed firest. Santa Rosa area - hilly a mosain of dry grave small patcher of closed evergreen and closed deciderous friest, some spen front and some savanna. Orcharde en flat ground. Jone offen field. * Leattered large dates tills in distance to west from Winden seem to have onifers prominent earlies of oak savanna on flat ground. In east is distance the about Ma. St. Heleng, worded but in places thinly so. Love hills gradly worded, especially ravines, some fealdsburg - Vineyards and orchards on flat land.

126 1797 California Mendouing G

desiduous freit, chapanal. grass very heavily grazed. When sloper and vidges tend to be predominantly chapanal. On range east of Ukial forest ittling, no reduvood. On that to west they are patches of redevoord generally thickes fred. Considerable areas of chapmal on high ridges and steel slopes of both, in some parts predominant generally. as immediately west of North of Ukrah on low hills the frest becomes dense and quite mixed. forme offen areas, grasse or savanna, 10 months and brigher, mostly savanne Higher who more forest then Chapanas. Distribution of patches of comper frest very inegular - probably remnants from logging. north, toward Willits much confer timber, mainly Pseudotauga. Lowerdown mainly deciderous oals, much Phradendran. Lome Pinus pondersa

1959 Virginia 132 Khenandosch Nat. Part. 133 Dec. 12, 1959 - Hogbach mt with rocks protruding oak, mostly quercus abrundantly from ground fort thin and usually rubia, of low trees, full of stones. In place 6-10 m. tall, flat topped a tufted ground layer and with very thick of Deschampsig. The trees thewise of Lichen alrundant on trunker of older trees athin show layer and on rocks Floch of 3 raver mostly of Kalmin latifolia, weally of south of here. Herd of 6 deer plus one along! ground very welly north of here. 1040 m 40760 Parmelia on dead long. 66 67 69 Umbilicains 71 Umbilicaria 72 moss 73 (moss) on wels

134 1959 Vingmia flewandrah vax Ph. 135 Dec. 17- Ela Wallow Shelter Rather Thin mised brest on gentle with, Bright are whilm, very little undergrowth. 740 mg. 40774 (liche) 75 (Rich.) 77 .. 80 Leslier 92 84 . Parmelia on tree trunks 85 mas on rock 89 (litter 90 (moss) on base of her 97 Lichen munh 94 " on trunk of accombine

138 Der. 17. Whiteout Canyon or few old Truga, sentient old Juneau alba som small Betula alleghamiensis Myses & lichens on webs, earth and Gallen bancher of bond leafetrees- in fichen Protocoreus? conspienons 40804 (dishey) 05 (Protocores ?) Ob Lycopodium obscurum under Tsuga. 107 moss 08 lichen 09 1. 10 1. on fallen branches of broad-leaf trees 12 (moza) 15 (lecter) 16 Eladonia 17 mors 19 Inches

1999 Vinginia 140 408 19 moss Bartramia 20 mass Thuidium on early in small spening 21 (hohen) on well below Mary's Roch. 24 Cladonia on road cut in well Dec. 20 - 1 mi. n. of Centerville 75 Cladonia common on ground in Pinus virginiana forest. 26 Cladonia samo 27 (diela). same 29 Cladering in heavily grand in often grassland being invaded by small pines.

142 1960 Vinginia 143 Vantor G. 7.67 - about vmi et Jan-1 - between yallows Rd. and Pino Aprings on of Lunet Hills arlungton Blood. Fourface Co. Thick I im vigino Rather dissected wooded area perhaps frest, ores 18-15 m. tall rom relief mined 1-4 m, apart, 5-20cm, apart. some Connes floridg of ook, tulip Venue virginiana + P, rigida fair suze, deciduois nothing over you. saplings. dole of the average Count of plants along Odum series: Has been cut but not 20 = 9 too resently, strong evidence of fret charred stumps + 300 bases of trees. Unisual amount Pinus virginians of- they offracq in low parts of vally ach rubrum The understory is Loncera japonies Heterotheig marians actually green. feettele & holly Chimaphila maculala elsewhere Cornus flouda 7 & undet no great amount Mitchella repens of horrysuckle. Tome drigdention goverbier. I forme areas with only Liquidambas Vitis st. suplings. Larrapar Amilas my

Jeb. 12 - 4501 Kinly

Somewhat dissected edge
of fotowne navine
17 ave - large hours
about , are reliard and
2-3 aves open on one hill,
small patches of fines

pasture Ravin between has mixed woods largely mixed compers, esf. Limes strotus planted, some tulity popular, etc. 3 small produces bottom of ravine (lover me does not hold water), shring in head of ravine, wild planted on terraces around pands. One solid gave of young pies. Love agaleas planted.

Some semi- open slopes with and ropogen, Sonicerajoponies, 19.

To year ago the entere

area was simpletely denuted.

many hees planted, but

Tulifo, I mus verginiana,

valis etc. have come in.

149 960 new york what co 148 march 7 4 - Lein Mohonk inglomerate, with lah Well world with mixture of hem lock white y notely some praper Find, whestmut only as demalanther yellow birch lane of Ealming to and ablantan Vaccinium Was burned wer in the 17000 very thoroughly, Then we largely grew up to chestnut, which was eliminated in freget when the hallowed " Worker ranks frame - with witch fring at birt in page sand but much bow rock also.

Shenandowh national 4151 Virginia 1960 150 april v - Soyline Drive just south of Pressin Calm, m. y. 60. greenish yellow. 4 829 Hamamelis very mians common in thickets on flat april & thylens Drive just north of Baldface Mt. Overlook showly 2.5 m. tall, word greenish yellow. 30 Hamameli virginians common in this works m moderate stope april & freight Run gap. west slope. words of Jagus, querens, Magnolis Betula etc. in valley along small 31 Tigalaria discolor aplettum hyemile leaves green with strong white news, occasional plicate. 32 Trifagus verginans Tagus grandefolis some I mus vinginians (2-4 m.) april 17 - Hunter Valley, 21/2 mi acer ruhum (2-4 m.), langles n. of Oakton (near Hunter Valley of Rubus argulus, and Swimming Pool.) closed mixed grass, gentle slope fracing north some and oprogin and Tristens dued from last yes, with sogs old field regetation varying from mixed shout savanna to of mised ofen scrib of young I numes serolina saplings (2-5 m.), Juniperus vaginiana (2-3(4) m.),

152 1960 Vinginis april 17 - Imall affelvent of Difficult Run

white out black out tuly, in bottom of walley walley with omnoderable patches of Kalming Lycopolium of summer of complanature, some fair sixed trees.

Belt of thin sent pin around north slopes and beadwaters.

nthis pring belt is an area of some area in which most of freme have been blown down, toward east, some years back leaving attricket of soflings. both fine and bond leap, some blex ofrace 4-8 m tall a littly cutting some year back judging By a few fine strongs of fair sign huch Vaccinium in undergrowth, both high & low bush. Chimaphila maenlata mitchella common Pyrola

Fairfax Co. 156 1940 Vinginia drabis ving ? tent (of !) agril 24 - north of Centreville Podophyllum peltatum (b) small gratch of lime Copulus deltoides virginiana woods. lex offacy Trees 1-3 m. afrant, in Khrolodendron st. (6) To 15 (20) em. dol. 10-12m. till. Khus toxicodendin thin Reniena Japonica Dentaria laciniata (fl) over much of ground. Cerus canadensis (ff) Considerable Junipling Glesoma hederaces (fl) virginiana my to half Vinus virginians the height of the prime. Van thenreissus quinquefolia Almos scarce, a few Vaccinium stamineum (b) econus florida to 1 m. Tall, Vaburnum brunifolium le fassifiar lo 1.5 m. Varrinium vacillans very small co) cilmus of., Vc Vrumus sertuna (c) quereus of. seaves of trees from just showing to 1/2 or even hay In ace rubum, Vibunian prinifhing Herbs & dwarf shrubs: expanded. r-le Chimaphila maculata Ilc Varonica officinalis Tentilla (canadensis!) april 24 - Sleepy Hollow Vaccinium vacillans Hedratis caerules (ff) dehilles millefolium of purple fincher 3 male, over eating grit from sand pile on terrace. o Dancus carola c galium Portophyllum pellatum la Rosa carolina v a Amilar glaves Oxalis sp. a antennaria c antennain plantaginifolia

Tairfax G. Virginia 159 158 1960 vane on broken ground I la illium vineale to fine Jumperus longiniana a asplenium platyneum 1-2 m. afrait, up to 10 cm, del. 10 Klins toxicadendian 8 m. tall. Here Rhus toxicodentia V c(la) Kubus of (hishidus?) is much more abundant. · le Lanthonia spicata a Enjoybodium complanatum ve folidags of (funcion) you field with andropogn nearby-invaled by limins virginiana and funderus. Underlined herbs from pene front also seen here. another similar but dense patch of fine, with much less Lowers and seeming less distribed. species seen here in list on 66.157.9 marked . Jumpers much less abundant and smaller Ranunculus abortions (fl) Prunella vulgaris asseyrum hypericoides Eignostis simplex (fl) 40833 artennain occasional in Proves virginiana woods.

May 7- Everglades Nat. Park. "Marl' soil-Distichlis flats. Batis flats.

Thangot which came in after 1934 hunisane -Rhizophora about 8 m. tall and loem. diam. closed town he nother clumbed, 1- 3m afrait, sedling, abundant near edger. noots not quite contiguous. Stand of Conversion nother oply, with shell Borbelita etc. Trees about 4 m. tall. Large blowdown commen Other stands of Khizophang very dense, small poles om. Bow Convention stands with dense Bruchia ground lays, even through carrolly almost closes, but thin. Cillandria common os trunks.

Small meadows of

Brichia, Balio, elc.

37919190095 National Park, Florida photas) fratiles. lement many between Sand (shots.) tered lium red 4 & 3 m. all 2 alf al fralmer

ETOPOIDA DOS National Park, Florida



Everglades NATIONAL PARK

OPEN ALL YEAR

This southernmost tip of the Florida mainland was established as Everglades National Park on June 20, 1947, thus assuring the preservation of its unique biological features in their natural state for all time. Many people had contributed their time and efforts to accomplish this goal.

The park boundaries encompass more than 2,100 square miles of land and water. This vast wilderness, blending sea and sky in the distance, dips imperceptibly to the shallow waters of Florida Bay on the south and to the Gulf of Mexico on the west.

Threshold to the Tropics

In effect, Everglades is a mosaic of many interesting things, each strongly influenced by the tropical climate. Plants of the Temperate Zone meet plants of the Torrid Zone; fresh water meets salt water; and land meets sea. The grasslands of the true Everglades stretch across the horizon. Clusters of trees, called hammocks, resemble islands in the open Everglades and among the pines. Following the shorelines and growing upon keys (islands) in open water, mangrove forests form almost impenetrable thickets.

Warmed by the sun and nourished by the waters, the area is biologically fertile, supporting many interrelated forms of plant and animal life under natural conditions. Outstanding among the features of the park are the rookeries of birds.

Park rangers will assist you and give you information on what to see and do during your visit. The park naturalist staff conducts programs and walks designed to give you a better understanding of the wildlife, geology, plants, and history of the Everglades country. Schedules of these interpretive services are available at all ranger stations.

The National Park System, of which this park is a unit, is dedicated to conserving the scenic, scientific, and historic heritage of the United States for the benefit and enjoyment of its people.

The Winter Season

Weather is normally pleasant and clear, with very little rainfall. Temperatures are often described as "about like June up north," and people dress accordingly. However, brief cold snaps do occur occasionally, sometimes bringing strong northerly winds and possibly frost.

This dry season is the best time to see the abundant wildlife, which tends to concentrate in sloughs, lakes, and other water areas. Many of the large, spectacular wading birds-egrets, ibis, herons, and roseate spoonbills—nest in their rookeries during midwinter and early spring. Waterfowl and other bird migrants from the north are in the park area.

Practically all trees, shrubs, and other plants stay green all winter, although the grasses and sedges of the Everglades take on brownish hues. Fishing is good, as a rule, but it is variable. Boating is generally good, but waters may become rough during this season.

The Summer Season

The majestic clouds of summer, though they may produce brief torrential showers, give a beauty to the landscape that you would miss in the winter. Wildlife is distributed over wide areas and is not so easily seen. Fishing is at its best, and the waters of the park are usually calmer than in winter. In the summer, you should bring insect repellant with you, for the pests can become bothersome.

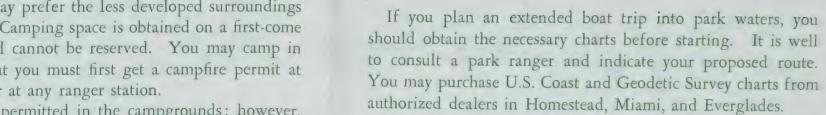
Overnight Accommodations, Picnicking, and Camping

Overnight accommodations in the park are limited; therefore, you should make reservations well ahead of your visit in order to insure having a place to stay. You may reserve your accommodations by writing to Everglades Park Co., Inc., either at Flamingo, Fla., or at 3660 Coral Way, Miami 45, Fla. Also, you may telephone this company at either Miami or Everglades, Fla.

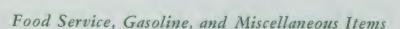
You may picnic at Flamingo, where drinking fountains, tables, charcoal burners, and restrooms are available; in the Long Pine Key area, where there are tables and toilets; and at Nine Mile Pond, where only picnic tables are provided.

You may enjoy camping at an improved campground at Flamingo; or you may prefer the less developed surroundings at Long Pine Key. Camping space is obtained on a first-come first-served basis and cannot be reserved. You may camp in the back country, but you must first get a campfire permit at park headquarters or at any ranger station.

Housetrailers are permitted in the campgrounds; however, electric, water, and sewer hookups are not available.

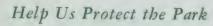


Boats for sightseeing and charter boats for fishing go out from Flamingo and Everglades. These are carefully inspected for safety by both Coast Guard personnel and park rangers. Reservations are usually necessary during the peak of the winter season. Names and addresses of authorized operators of charter boats may be obtained at park headquarters.



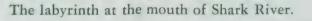
At Flamingo, you will find modern dining facilities and service stations for boats and cars. Also available at this newly developed area are boat rentals, bait, store supplies, and souvenirs.

A general-delivery post office is operated at Flamingo.



To accomplish our objectives of protecting and preserving the wilderness, and to leave Everglades undisturbed for the enjoyment of our own and future generations, we must have park rules and regulations.

Everglades National Park is a sanctuary for all wildlife. Recent years of protection have made the wild creatures lose much of their fear of man. Therefore, we ask that you please not throw rocks or in any way attempt to disturb the birds, alligators, or any form of wildlife. Hunting or the use of firearms is strictly prohibited. Fishing is permitted in accordance with State laws.







Roseate spoonbills. Courtesy, F.S.N.B.

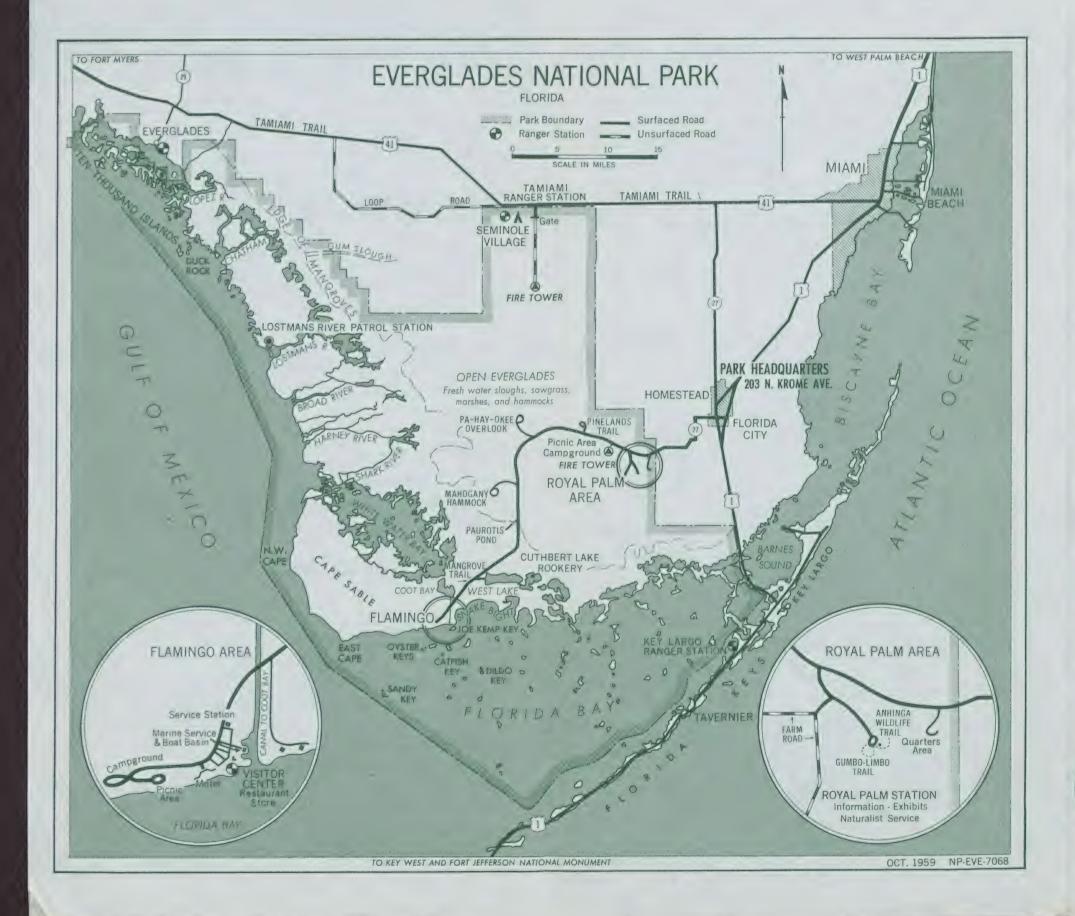
Trees, shrubs, airplants, orchids, and other plants must not be removed or disturbed—other visitors wish to see them, too.

Speed Limit

For your safety and for the safety of the wild creatures, the speed limit in the park is 45 miles per hour. You'll find that the more leisurely you drive, the more you will enjoy the Everglades scene.

Mission 66

MISSION 66 is a program designed to be completed by 1966 which will assure the maximum protection of the scenic, scientific, wilderness, and historic resources of the National Park System in such ways and by such means as will make them available for the use and enjoyment of present and future generations. Tangible evidences of the progress being made under the program here at Everglades include the new road, camping facilities, and the development at Flamingo.



Self-guiding Trails, Exhibits, and Facilities Along the

Park Road

[Trails do not exceed 20 minutes walking time]

es from rance to urnoss	
2	Royal Palm area: Royal Palm Visitor Center—exhibits, naturalist programs, restrooms.
	Anhinga Trail—a wildlife trail.
	Gumbo Limbo Trail—a jungle trail through tropical hardwood hammock.
4	Long Pine Key area:
	Campground—limited facilities. Picnic area—limited facilities, picnic tables, toilets.
6.5	Pinelands Trail—a pinewoods community trail.
12.5	Pa-Hay-Okee—boardwalk and tower for panoramic view.
19.5	Mahogany Hammock—elevated boardwalk into mahogany forest.
24.5	Paurotis Pond—parking for view of rare palms.
26.5	Nine Mile Pond—limited picnicking facilities.
30.5	West Lake area: Mangrove Trail—an elevated boardwalk into dense, tropical, mangrove swamp. West Lake Pond—Cuthbert rookery boat trip (Feb.—May), waterfowl.
38	Flamingo area:
	Exhibits, naturalist programs, marina, sightseeing boats, restaurant, motel, service station, picnic area, campground.

Administration

Everglades National Park is administered by the National Park Service, U.S. Department of the Interior, with headquarters at 203 North Krome Avenue in the business district of Homestead, Fla. For further information, call in person or telephone or write the Superintendent, Box 275, Homestead, Fla.



UNITED STATES DEPARTMENT OF THE INTERIOR

Fred A. Seaton, Secretary

NATIONAL PARK SERVICE Conrad L. Wirth, Director

U.S. GOVERNMENT PRINTING OFFICE: 1959—O-527192



may 7- Everglades Nat. Park. "Marl soil-Distichlis flats. Batis flats.

Thangy We which came in after 1935 hunisane -Rheyophona about 8 m. tall and leem. diam. closed town his nothing Chumped. 1-3m afraix. sedlings abundant near edger. noots not quite contiguous. Stand of Convertino rather open, with her Larges of Batis, Laluconie, Briefin et . Trees about i m. tall. Large blowdown comman Other stands of Khizophang very dense, small poles om. Tall! How Conventur stands with dense Brichia grand layer, even though canopy almost closes, but thin Villandsia commos os trunks. small meadows of Brichia, Batio, etc.

mangrove trail Soard trail in dense 5-10 m. tall with scattered avicennia (Kort Canglesdens (photos) acostichum common. Some low mixtures of Cladium and shoubly mangroves. Saw grass march patches. along road embarliment Bidens pilosa var. Cynolon daitylon, etc. much low mangrove with open water between chumps. auntus clumps on whenh (photo.) Marsh with scattered diny mangroves. (photo) Large areas of Cladium drab green. Icattered small Taxodium up & 7 m. tall ocathered small hammorles or patches of shrubs, with dense undergrowth of small fran palms (ferenca) than pine , land with saw grass and palmer

165164 anhinga / rail -Vine himmochs Patcher of Hicket of are small pratches of Salix, patches of reel this with cruck and falms with luxurant Auplier. Exphalanthus, anny Mahogany Hammochglaba vecasional. lately of dense low sanhingen, reduring forest, very mixed, blackbird, alligator with scattered four Coccolog buy Engenia arlinia, ton, Bursers. bull group, and gar-fuch Blechnum (2) m ground. Polypodister, Tillandsia, Include nephroletis. Striking strangling Gigs (7 amera) I pen goest or should of small cytorerses 2 - 5 m. Tall over considerable area. areas of offentine - lands more and more common northward. Vines worthy small, widely spaces. For sout layer dense. all the palms seems to be in flower.

May 8 - Home Corement grove - boat landing In shore news Mathiesses Hammoch. an inequal maye of filled land open water and mangrove swamp. the swamps are dominated by Khizophna manyle small trees 2-10cm Abh. 2-8 m, Tall. crowded, spacing 0.3 - 3 m arching acrial roots gorning a tangle about im high, some nosts higher some trees also sending down vertical norts from the hundres as lings as 3 m. In these swamps are reallered trees of avicenia and Laguncularia, both sending up numerous vertical finger- like kneer a few inches high all over the ground around their bases. nothing else seems to grow in the actual swamps. In the margine Convergus evertus trees on shrubs of z form, a glabour green one and a sericeous one, and cocroboba wrifing, and therperia populnea (one tree seen) are found, in places prominently

Egricin of Borriches futeron, Servicing portular astama, Thurbigger atatas mall open spots and in simal open spots of Cotulary oranses (large fla.), etc. Around park ha landancy tectorius, Ochrosia elliptica, Tiens of felicus terebiotlifolius, and Coccoloba surifera, Myrsine of the Coccoloba surifera, Myrsine of the planted. My joysia tennighia.

In mangrove swamp the trees are somewhat unequilarly dumped. Many seedlings. Many old wind thrown trunks tangled in the acrial not layer.

Landward along the road the manger to and the negetation changer to a sent, still partler toward the land this thins out, fagurable land this thins out, fagurable (drimmendie?) becomes abundant with the mangroves. Then the Rhizophora becomes less abundant and the

168

Lagurenlain become abundant. The Juneus drops out and the semb becomes more inequalor and sparser. then there is an aneq cleared for quenicing. then the hammorch begins and extendity the shighway. this is on slightly higher ground where the surface is a moderately megular one of a sportige-like solitie line sandstong. Here the vegetation is a granled, twisted low forest, 6-8 m. tall with a mixture of broad-by trees up to 3 dm aloth but mostly 6-12 cm. a smaller, spaced 1-2 m. apart, with a conspicuous surface larger of roots. The undergrowth is moderate, of saplings and should sychotic ferrensa Mectandra? Evgenigeti) 1- × m, tall scarcely seedling flanger plants) thin more and algal woon in the rocks. a few epighytes

Dade Co. 170 1960 Florida 171 Coral gables, south of miami Metophytic evely 40834 Psychotia shrub, m. talf; blowers white, common in mesophyter evergeen frest 35 Englishing supring? common on fill of arushed volitie limestone. should 2 m, tall, selveny- silly, 36 Cono confres erectus common edges of mangrave vegetation. clump 2 m. talp. 37 Phragmite, occasional on limeston fell Gragnant, white. 38 (Candia common in ofren fine frest. 39 Hedystis often sandy prine frest

